# REQUEST FOR PROPOSALS

# Examination of the commercial uses for Salton Sea Tilapia

**Issued on June 19, 2000 by the**

**Salton Sea Authority**

Responses Due: July 19, 2000

# 1. GENERAL BACKGROUND

The Salton Sea Authority, in conjunction with the Bureau of Reclamation, is undertaking efforts to improve conditions at the Salton Sea (Sea), California. Our restoration objectives are:

- Maintaining the Sea as a repository of agricultural drainage from the Imperial and Coachella Valleys
- Providing a safe, productive environment for resident and migratory birds and endangered species
- Restoring recreational uses
- Maintaining a viable sport fishery
- Providing opportunities for economic development along the shoreline

The Sea is located in the southeastern desert of California and spans Riverside and Imperial Counties. The closest cities include Coachella, Calipatria and Westmoreland. The Sea, having a surface elevation of approximately 227 feet below sea level, is situated in a closed basin. It is sustained by inflow of drainage from irrigated agriculture in both the Coachella Valley to the north and the Imperial Valley to the south and by flows from Mexico, which consist mostly of agricultural drainage and some municipal and industrial wastewater.

The Salton Sea Authority is a regional agency formed as a Joint Powers Agency by the Coachella Valley Water District, the Imperial Irrigation District, the County of Riverside and the County of Imperial. Additional information about the Sea and restoration efforts is provided at www.lc.usbr.gov.

# 2. TILAPIA IN THE SALTON SEA

The Salton Sea supports a large fish population due to its highly eutrophic nature. The nutrient load from agricultural drainage creates an abundant of food sources for various fish and a diverse range of bird species.

The only fish native to the Sea is the endangered Desert Pupfish that inhabit drainage ditches and estuaries. All other species were introduced to the Sea by the California State Department of Fish & Game during the 1950s in an effort to create recreational angling opportunities. During the 1960s, Tilapia found their way into the Sea from irrigation canals and an accidental release from an area fish farm. At present, the Sea supports the following main fish species with Tilapia being by far the most abundant by weight:

Tilapia (Oreochromis mossambicus)
Gulf Croaker (Bairdiella icistia)
Orange-mouthed Corvina (Cynoscion xanthulus)
Sargo (Anisotremus davidsoni)

To ascertain relative abundance, fish population levels and preferred habitat, a study was undertaken by fisheries scientists during 1999. For planning purposes, the anticipated harvest rate for Tilapia is estimated at 50,000 tons per year which may prove to be a conservative estimate. Further investigation into population levels, by-catch issues, bird needs and other matters would need to be addressed before a commercial fishery would be permitted by California Fish & Game, the agency responsible for fisheries management.

## 3. WORK TO DATE

Initially the researchers associated with the restoration effort envisioned a fish harvest as a method of reducing nutrients in the overburdened lake system. As the most numerous (and truly exotic) species, Tilapia have been targeted for such a program. Further, Tilapia, are by far, the most prevalent in fish die-offs and a reduction in their numbers would likely lessen the scale of these unpleasant events. And finally, the restoration project goals entail creating economic opportunities at the Sea.

Due to the current human health advisory (elevated selenium levels – recommend 4 oz. or less per 2 week period), it is anticipated that Tilapia would be used for non-human oriented products such as: fish meal/oil, fertilizer, pet food or other possible uses (leather from skin). A comprehensive study to test for any elevated chemical contaminants will commence shortly. It is anticipated that Tilapia will meet the thresholds established by the California Department of Food & Agriculture (Commercial Feed Regulations) however conclusive results will not be available until the summer of 2001 due to pre-spawn sampling requirements. The same testing regime will also satisfy the far less stringent fertilizer regulations.

There has been interest expressed in a supply of Tilapia from the pet food industry. A small sample was analyzed for its nutritional components that yielded promising results (satisfactory protein level and relatively low fat). The next step is to collect a 2,000 lb sample for creating various batches of cat food and putting these to a serious of feline taste tests. It appears the pet food industry is finding reliable fish supplies difficult to secure and hence the appeal of a predictable and steady stream of Tilapia.

Tilapia leather is another potential market opportunity. Because of its tough skin, Tilapia is used for a variety of products in its native Africa. No research has been done in this area but it may have potential along with other, as yet undiscovered, uses of this versatile fish.

## 4. SALTON SEA ENVIRONMENT

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| Surface area: | 365 sq. miles (approx. 35 miles long x 10-13 miles wide) |
| Elevation: | 227 feet below sea level |
| Depth: | max. 50 feet / average 15-30' / many shallow areas |
| Salinity: | 44,000 mg/l or 25% saltier than the Pacific Ocean |
| Air temperatures: | winter averages, lows 40-45F & highs 70-75F<br>summer averages, lows 68-80F & highs 102-108F<br>summer extreme highs 120F+ |
| Water temps: | winter averages, 54-60F<br>summer averages, 70-85F |

## 5. SERVICES REQUIRED

The purpose of this study is to aid the Authority (and other groups: agencies and private industry) in examining and planning a fish harvesting strategy for the Salton Sea. Rather than an in depth feasibility study, the Authority is seeking an examination focused on market opportunities, an overview of economic considerations and recommendations to move forward. It is anticipated that such analysis would provide answers to the following types of questions:

End products

How could Tilapia harvested from the Salton Sea be utilized? In what products form(s)?

With a very large agricultural community abutting both ends of the Salton Sea (over 500,00 acres under cultivation), what opportunities exist to market locally for fertilizer applications?

Surprising there is also significant aquaculture in the region (trout, bass, catfish & Tilapia). Again, can Tilapia be processed into fish feed for local use?

Processes

For each of these end products, what processing plants and equipment would be required?

Where might these plant(s) be located along the Sea?

Economic analysis

What are the capital/operating costs and accompanying revenues for the options?

Recommended approach

The Authority is seeking private industry participation in any harvesting and processing sector. Given financial projections, which market and processing plan makes the most economic sense from both an investment return and operating income basis?

Harvesting

Given a recommended approach, what are the implications for the type of commercial harvest (boats, gear, quality & fishing seasons)? What are the economics of the harvesting sector? Specific harvesting techniques are outside the realm of this assignment.

Viability

What are the overall economic realities of a new industry? Is there sufficient profitability to attract private industry to invest and operate? If not, what is the revenue shortfall (or needed subsidy)?

Issues

What regulatory requirements need to be met in planning a fish processing facility? What other issues arise that will have to be addressed?

Related work

Fish die-offs regularly occurs at the Salton Sea during the winter season (cold stress – primarily Tilapia) and summer season (low dissolved oxygen – primarily Tilapia, some Croaker and Corvina). As these fish are not diseased, could the suggested processing equipment/plant be utilized to convert dead fish collected to a useable product such as fertilizer? Plans are afoot to develop an on-water fish recovery system that could provide raw material to a proposed plant(s).

Pilot project

If the Authority wished to pursue the recommended approach, what is the suggested starting point or "pilot project"?

For the purposes of establishing equal assumptions, bidders should anticipate two fact finding trips to the Salton Sea as well as presenting recommendations to both the Salton Sea Authority's Technical Advisory Committee and Board of Directors (meetings held at separate times).

There is the possibility that additional services would be required beyond this initial examination such as detailed feasibility studies or other in-depth work. The Authority reserves the right to further contract with a successful bidder.

## 6. SCHEDULE

Completion of the study is desired within three months of the contract issuance.

## 7. SUBMITTAL REQUIREMENTS

Responses are due on or before July 19, 2000 at 5:00 PM, to the following address:

Rob Renke, Project Management Consultant
Salton Sea Authority
78-401 Highway 111, Suite T

La Quinta, California 92253-2066
Phone (760) 564-4888
Fax: (760) 564-5288
rrenke@salton-sea.dst.ca.us

Questions may be directed in writing (via fax or e-mail). All relevant questions and responses will be posted on the following website:

http://www.lc.usbr.gov/~saltnsea/current_rfp.html

Please submit five (5) copies of your proposal on 8.5" x 11" paper (stapled not bound). The proposals should be no more than 8 pages, excluding appendices that may contain qualifications, resumes and promotional materials.

Proposals should generally be prepared in sections as follows:

1. **Cover Page/Introduction/Understanding of the Project**

2. **Experience**
   - Describe projects similar in scope/complexity that your firm has accomplished. Identify references and phone numbers for each project identified. Of particular relevance are start-up situations or feasibility studies.

3. **Qualifications**
   - Describe your firm's qualifications related to this project and identify key personnel and their relevant expertise.
   - Acknowledge any relationship that you have with any major Salton Sea stakeholder/interest group. If there are no relationships, please state so.

4. **Costs**
   - Prepare cost estimates with breakdowns: professional services, materials, travel and other items (include standard rate sheet if appropriate).

5. **Appendices**

## 8. SELECTION PROCESS

The Salton Sea Authority will use the following criteria in the selection process:

- Qualifications & Relevant Experience
- Responsiveness to this RFP
- Availability to commence study

- Cost

Funding for this work program comes from a grant issued through the U.S. Environmental Protection Agency. The Authority encourages small, minority and women-owned businesses to submit proposals.

The Authority reserves the right, at its sole discretion, to reject any or all proposal(s) received as a result of this request, to negotiate with any qualified source, and to cancel in part or in its entirety this request for proposal. The receipt of proposals shall not in any way obligate the Authority to enter into a contract of any kind with any proposer(s). The Authority will not be responsible in any manner for the costs associated or incurred with the preparation and submission of the proposals.